SECTION J
APPENDIX O - AMWTP WAC

WASTE ACCEPTANCE CRITERIA FOR THE ADVANCED MIXED WASTE TREATMENT PROJECT

The purpose of this Waste Acceptance Criteria (WAC) document is to define the BNFL Team's requirements for accepting waste for treatment at our INEL-based Advanced Mixed Waste Treatment Project (AMWTP). These requirements are based on the presently proposed and evaluated design capability of the treatment processes described in our Technical Proposal. Wastes which do not meet the criteria stated herein may be accepted for treatment, but only following a detailed case-by-case evaluation of the specific waste characteristics, and special authorization from the AMWTP General Manager.

Exhibit 1 presents a summary of the WAC for INEL wastes required to be treated in the AMWTP.

Exhibit 2 presents a summary of the WAC for non-INEL wastes which could be received for treatment in the AMWTP.

Please note that the WAC proposed in this section are for receipt of wastes for treatment, and not for outgoing, treated wastes. Treated wastes will met the WAC for the respective disposal sites. Also note that the WAC presented in this section is subject to change as more is learned about the specific physical, chemical, and radiological characteristics of the INEL stored wastes, and the needs of other potential INEL and non-INEL customers.

Exhibit I

SUMMARY OF AMWTP WASTE ACCEPTANCE CRITERIA FOR INEL WASTES

Criteria	Requirement
General	
General	• Waste must be characterized for identity and quantity of radionuclides, organic and inorganic constituents, and metals • Waste must not contain classified materials
Containment and Physical Properties	
Size	• Waste must be packaged in a; 1. 55 gallon drum, or 2. Overpack drum no larger than 83 gallons, or 3. Standard Waste Box (SWB), or 4. Overpacked SWB, or 5. 4'X4'x7' box 6. Other sized boxes may be considered on a case-by-case basis, and are limited only by the physical dimensions of the receipt, opening and content removal capacity of the AMWTP
Containment	• Waste must be confined in at least two levels of containment • All containers must be vented (filtered vent) • Containers must not contain shielded radioactive material (case-by-case evaluation)
Marking/Labeling	• Containers must be uniquely numbered or coded for tracking purposes
Package Weight	• Drum gross weight must not exceed 1,000 lb • Box gross weight must not exceed 8,000 lb
Free Liquids	• Quantity and composition of free liquids must be identified in the characterization information
Particulates	• No restrictions

Chemical Requirements	
Metals	• Separable or contained beryllium metals, mercury and lead must be identified in the characterization information • Beryllium-contaminated wastes from foundries, extraction plants, ceramic plants and propellant plants are prohibited • Mercury-contaminated wastes must not exceed 1,000 ppm
Corrosives	• Waste must not contain corrosive materials (<2 or >12.5 pH)
Explosives, Pyrophorics, Reactives, and Compressed Gases	• Waste must not contain explosive or pyrophoric material, except for pyrophoric forms of radionuclides • Waste must not contain DOT Class 1 explosives • Waste must not contain reactive metals or forbidden materials per 49 CFR 173.21. • Waste must not contain compressed gases. Pressurized containers must be vented and drained
Mixed/TSCA Waste	• Mixed waste is acceptable except as restricted in other parts of this WAC (see general topic above) • Liquid PCB waste must not exceed 50 ppm
Other	• Pathological or etiologic agents must be identified in characterization information
Nuclear Properties	
Fissile Mass	• Drums must not contain more than 200 grams of Pu-239 fissile-gram equivalent (FGE) • Boxes must not contain more than 325 grams (FGE) • Waste containers with more than 15 grams of non-TRU fissile material (e.g. U-235) must be reviewed and approved on a case-by-case basis
Pu-239 Equivalent Activity (PE-Ci)	• Waste containers must not contain more than 1,000 PE-Ci
Non-Fissile Radionuclides	• Waste containers must not contain more than 1 Ci of non-TRU beta-gamma emitting radionuclides

Dose Rate	• Contact dose rate (beta + gamma + neutron) at any point on the surface of a container must not exceed 200 mRem/hr • Dose rate (gamma + neutron) at two meters from the surface of a container must not exceed 10 mRem/hr • Neutron contributions (at contact) greater than 20 mRem/hr must be documented in the characterization information
Surface Contamination	• Removable contamination shall not exceed 200 dpm/100 cm^2 beta - gamma activity, or 20 dpm/100 cm^2 of alpha activity
Thermal Power	• Containers with thermal power greater than 0.1 watt/ft^3 must be identified and quantified in the characterization information

EXHIBIT 2

SUMMARY OF WASTE ACCEPTANCE CRITERIA FOR WASTES RECEIVED FROM NON-INEL SITES

Requirement	
General	• Generators must receive approval from the BNFL Team prior to shipping waste to the AMWTP Facility • Waste must be characterized for identity and quantity of radionuclides, organic and inorganic constituents, and metals • Waste must not contain classified materials • Each waste container must be accompanied by a data package
[illegible]	
Size	• Waste must be packaged in one of the following DOT-approved containers; 1. 55 gallon drum, or 2. Overpack drum no larger than 83 gallons, or 3. Standard Waste Box (SWB), or 4. Overpacked SWB, or 5. 4'X4'x7' box 6. Other sized boxes may be considered on a case-by-case basis, and are limited only by the physical dimensions of the receipt, opening and content removal capacity of the AMWTP
Containment	• Waste must be confined in at least two levels of containment • All containers must be vented (filtered vent) • Containers must not contain shielded radioactive material (case-by-case evaluation)
Marking/Labeling	• Containers must be uniquely numbered or coded for tracking purposes • Waste packages must have DOT labels, RCRA labels, container number, gross weight, and other appropriate DOE markings and labels.

Package Weight	• Drum gross weight must not exceed 1,000 lb • Box gross weight must not exceed 8,000 lb
Free Liquids	• Quantity and composition of free liquids must be identified in the characterization information
Particulates	• No restrictions
Metals	• Separable or contained beryllium metals, mercury and lead must be identified in the characterization information • Beryllium-contaminated wastes from foundries, extraction plants, ceramic plants and propellant plants are prohibited • Mercury-contaminated wastes must not exceed 1,000 ppm
Elemental Content Limits	• Chlorine is limited to 3 wt% • Sulfur is limited to 1 wt% • Fluorine is limited to 15 wt% • Phosphorus is limited to 5 wt% • Barium is limited to 15 wt% • Chromium is limited to 2 wt% • Chromium is limited to 2 wt% • Nickel is limited to 12 wt% • Silver is limited to 10 wt% • Cadmium is limited to 5 wt% • Thallium is limited to 1 wt% • Arsenic is limited to 2 wt% • Antimony is limited to 2 wt% • Selenium is limited to 2 wt% • Other elements are limited to 30 wt% except Si, Al, B, alkalis, alkaline earths, C, H, N, and O when calculated as the corresponding oxide
Corrosives	• Waste must not contain corrosive materials (<2 or >12.5 pH)

Criterion	Requirement
Explosives, Pyrophorics, Reactives, and Compressed Gases	• Waste must not contain explosive or pyrophoric material, except for pyrophoric forms of radionuclides • Waste must not contain DOT Class 1 explosives • Waste must not contain reactive metals or forbidden materials per 49 CFR 173.21. • Waste must not contain compressed gases. Pressurized containers must be vented and drained
Mixed/TSCA Waste	• Mixed wastes which have as their BDAT: AMLGM, CMBST, DEACT (for ignitable waste only), IMERC, and STABL will be accepted for treatment • Mixed waste with a technology-based treatment standard other than those listed above will be accepted on a case-by-case basis only • Liquid PCB waste must not exceed 50 ppm
Other	• Pathological or etiologic agents must be identified in characterization information • Waste must not contain incompatible material
Nuclear Properties	
Fissile Mass	• Drums must not contain more than 200 grams of Pu-239 fissile-gram equivalent (FGE) • Boxes must not contain more than 325 grams (FGE) • Waste containers with more than 15 grams of non-TRU fissile material (e.g. U-235) must be reviewed and approved on a case-by-case basis
Pu-239 Equivalent Activity (PE-Ci)	• Waste containers must not contain more than 1,000 PE-Ci
Non-Fissile Radionuclides	• Waste containers must not contain more than 1 Ci of non-TRU beta-gamma emitting radionuclides
Dose Rate	• Contact dose rate (beta + gamma + neutron) at any point on the surface of a container must not exceed 200 mRem/hr • Dose rate (gamma + neutron) at one meters from the surface of a container must not exceed 10 mRem/hr • Neutron contributions (at contact) greater than 20 mRem/hr must be documented in the characterization information
Surface Contamination	• Removable contamination shall not exceed 200 dpm/100 cm^2 beta - gamma activity, or 20 dpm/100 cm^2 of alpha activity

Thermal Power	• Containers with thermal power greater than 0.1 watt/ft^3 must be identified and quantified in the characterization information

Data Package	• Shipments of mixed waste must have an accompanying Hazardous Waste Manifest • The data package must contain the following information; 1. Package (container) identification number 2. Package assembly identification number (if applicable) 3. Date of waste package certification 4. Waste generation site (certification site) 5. Date of packaging (closure date) 6. Maximum surface dose rate in mRem/hr and specific neutron dose rate if greater than 20 mRem/hr 7. Weight 8. Container type 9. Physical description of waste form, content code(s), weight percent of organic material, and estimated weight or mass of organic material 10. Assay information, including PE-Ci, alpha Curies, and Pu-239 fissile gram equivalent content 11. Fissile mass plus two times the error 12. Radionuclide information including radionuclide symbol and quantity and: a. Characterization data should include all radionuclides that contribute >1% (by Curies) of the total activity of the waste matrix and any of the following radionuclides even if they contribute <1% of the total activity: H-3, C-14, Co-60, Ni-59, Ni-63, Se-79, Sr-90, Nb-94, Tc-99, I-129, Pu-241, Cm-242, Cs-137 and alpha-emitting nuclides with half-lives > 5 years b. Reporting of the radionuclides must include any parent-daughter radionuclide pairs that meet the above criteria (e.g., Ba-137 must be reported with Cs-137, Y-90 must be reported with Sr-90) c. Data must be reported in either grams or Curies

	Requirement
	13. Mixed wastes must have LDR materials characterized 14. Organics and inorganics must be characterized in terms of type and concentrations. 15. Measured or calculated thermal power (if greater than 0.1 watt/cubic foot); report this data in terms of decay heat plus error limits 16. Shipment number 17. Date of shipment 18. Vehicle type 19. Headspace VOC in ppm 20. Aspiration time determined and recorded in data package (or hydrogen gas concentration 21. Name of certifying official who certified the waste package